



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/997,079	11/27/2001	Koji Taniguchi	70840/56727	6129
21874	7590	07/13/2004	EXAMINER	
EDWARDS & ANGELL, LLP			SEFER, AHMED N	
P.O. BOX 55874			ART UNIT	
BOSTON, MA 02205			PAPER NUMBER	
			2826	

DATE MAILED: 07/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

an

Office Action Summary	Application No.	Applicant(s)	
	09/997,079	TANIGUCHI ET AL.	
	Examiner	Art Unit	
	A. Sefer	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 April 2004.
 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
 4a) Of the above claim(s) 15 and 16 is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 1-14 is/are rejected.
 7) ☐ Claim(s) _____ is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☒ The drawing(s) filed on 27 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendment filed on April 29, 2004 has been entered; no new claims have been introduced.

Response to Arguments

2. Applicant's arguments filed April 29, 2004 have been fully considered but they are not persuasive.

3. Applicants argue that Ito (JP 2-191914), unlike the present invention, discloses liquid crystal molecules having only one slant direction. Furthermore, Applicants refer to Ito's reference numeral 41 in fig. 3 to argue that there is a predominant direction of the electric field between the electrodes and the counter electrode in the Ito reference.

4. In response, it is to be noted that Ito's fig. 3 is a prior art showing transparent electrodes 35 having no tilted surfaces resulting in a tilt angle reference numeral 41 or a predominant direction of the electric field between the electrodes and the counter electrode.

5. Applicants also argue that Takeda et al. ("Takeda") US PG-Pub 2001/0020992 is inapposite to the present invention. And that the alignment of liquid crystal molecules achieved by Takeda arises as a result of the arrangement of singular point electrodes.

6. In response to applicant's argument that the alignment of liquid crystal molecules achieved by Takeda arises as a result of the arrangement of singular point electrodes, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Art Unit: 2826

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

8. Claims 1-5, 8, 9, 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Ito (JP 2-19194).

Ito discloses in figs. 1 and 2 a liquid crystal display apparatus, comprising: a pair of substrates 31/32; and a liquid crystal layer 39 having negative dielectric anisotropy sandwiched by the pair of substrates; wherein: electrodes 35 are provided on each of the pair of substrates, each pixel being defined by an electrode on one of the pair of substrates and a corresponding electrode on the other of the pair of substrates; liquid crystal molecules in the liquid crystal layer are oriented in a direction substantially perpendicular to a substrate surface in the absence of an applied voltage, are oriented in a direction substantially parallel to the substrate surface in the presence of an applied predetermined voltage, and are oriented in a slanting direction with respect to the substrate surface in the presence of an applied voltage less than the predetermined voltage; each of the electrodes provided on at least one of the pair of substrates has at least first and second tilted surfaces facing directions different from a direction substantially perpendicular to the substrate surface and being adjacent to each other; and an insulating film 36/37 is

Art Unit: 2826

provided on a liquid crystal molecule side of the electrodes provided on the at least one of the pair of substrates to bury the tilted surfaces of the electrodes to produce a flat surface of the at least one of the pair of substrates; wherein the slanting orientations of the liquid crystal molecules are regularly regulated to at least first and second predetermined directions different from a direction substantially perpendicular to a substrate surface due to said electrodes provided on at least one of the pair of substrates having at least first and second tilted surfaces (see transparent electrodes 35 disposed on the lower surface of substrate 31 in figs. 1 and 2) facing in directions different from a direction substantially perpendicular to the substrate surface.

As for claim 2, Ito discloses another insulating film 36 comprising predetermined protrusions, pits, or a pit-and-protrusion pattern having at least first and second tilted surfaces (unnumbered) is provided on a liquid crystal layer side of the at least one of the pair of substrates so that the electrodes provided on the at least one of the pair of substrates are provided on the another insulating film while the first and second tilted surfaces of the other insulating film are maintained.

As for claims 3 and 8, Ito discloses the first and second tilted surfaces of each of the electrodes provided on the at least one of the pair of substrates are provided for a corresponding pixel, and liquid crystal molecules in the corresponding pixel are tilted in directions different from a direction substantially perpendicular to the substrate surface, the directions being separated by a boundary between the first and second tilted surfaces.

As for claims 4, 5, 9 and 12, Ito discloses an insulating film 36/37 serving as a vertical alignment film provided by subjecting surfaces of the pair of substrates to vertical alignment treatment.

As for claim 11, Ito discloses the first and second tilted surfaces of each of the electrodes provided on the at least one of the pair of substrates are adjacent to each other to form a protrusion, an apex portion of the protrusion facing the liquid crystal layer, and a boundary between the first and second tilted surfaces are exposed from the insulating film to the liquid crystal layer.

9. Claims 1-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Takeda et al. US PG-Pub 2001/0020992.

Takeda et al disclose (see fig. 25 and par. 0129) a liquid crystal display apparatus, comprising: a pair of substrates 20/22; and a liquid crystal layer 6 having negative dielectric anisotropy sandwiched by the pair of substrates; wherein: electrodes 16/18 are provided on each of the pair of substrates, each pixel being defined by an electrode on one of the pair of substrate and a corresponding electrode on the other of the pair of substrates; liquid crystal molecules in the liquid crystal layer are oriented in a direction substantially perpendicular to a substrate surface in the absence of an applied voltage, are oriented in a direction substantially parallel to the substrate surface in the presence of an applied predetermined voltage, and are oriented in a slanting direction with respect to the substrate surface in the presence of an applied voltage less than the predetermined voltage; each of the electrodes provided on at least one of the pair of substrates has at least first and second tilted surfaces 50 facing directions different from a direction substantially perpendicular to the substrate surface and being adjacent to each other; and an insulating film 54 is provided on a liquid crystal molecule side of the electrodes provided on the at least one of the pair of substrates to bury the tilted surfaces of the electrodes to produce a flat surface of the at least one of the pair of substrates; wherein the slanting orientations of the

Art Unit: 2826

liquid crystal molecules are regularly regulated to at least first and second predetermined directions different from a direction substantially perpendicular to a substrate surface due to said electrodes provided on at least one of the pair of substrates having at least first and second tilted surfaces (see transparent electrodes 35 disposed on the lower surface of substrate 31 in figs. 1 and 2) facing in directions different from a direction substantially perpendicular to the substrate surface.

As for claim 2, Takeda et al disclose another insulating film 56 comprising predetermined protrusions, pits, or a pit-and-protrusion pattern having at least first and second tilted surfaces 52 are provided on a liquid crystal layer side of the at least one of the pair of substrates so that the electrodes provided on the at least one of the pair of substrates are provided on the another insulating film while the first and second tilted surfaces of the other insulating film are maintained.

As for claims 3 and 8, Takeda et al disclose the first and second tilted surfaces of each of the electrodes provided on the at least one of the pair of substrates are provided for a corresponding pixel, and liquid crystal molecules in the corresponding pixel are tilted in directions different from a direction substantially perpendicular to the substrate surface, the directions being separated by a boundary between the first and second tilted surfaces.

As for claims 4, 5, 9 and 12, Takeda et al disclose in fig. 29 an insulating film serving as a vertical alignment film provided by subjecting surfaces of the pair of substrates to vertical alignment treatment.

As for claims 6, 7, 10, 13 and 14, Takeda et al disclose in figs. 21 and 27 each of the electrodes provided on the at least one of the pair of substrates further has at least third and

Art Unit: 2826

fourth tilted surfaces adjacent to each other and facing directions different from the directions of the first and second tilted surfaces and the direction substantially perpendicular to the substrate surface; and a boundary between the first and second tilted surfaces and a boundary between the third and fourth tilted surfaces are oriented to directions different from each other in a plane parallel to the substrate surface.

As for claim 11, Takeda et al disclose the first and second tilted surfaces of each of the electrodes provided on the at least one of the pair of substrates are adjacent to each other to form a protrusion, an apex portion of the protrusion facing the liquid crystal layer, and a boundary between the first and second tilted surfaces are exposed from the insulating film to the liquid crystal layer.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

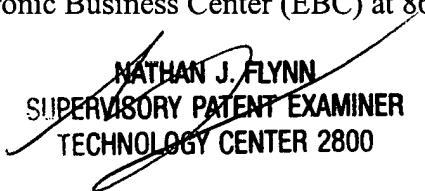
Art Unit: 2826

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Sefer whose telephone number is (571) 272-1921.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

ANS
July 9, 2004